CENTERS FOR DISEASE CONTROL

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Current Trends

Measles — United States, 1988

In 1988, a provisional total of 3411 measles cases was reported to the Division of Immunization, Center for Prevention Services, CDC, 7% less than the 3652 cases reported during the same period in 1987 (Figure 1) (*1*). The overall incidence rate for 1988 was 1.4 cases per 100,000 population. Nine states reported ≥100 cases and accounted for 2802 (82.1%) cases: California (836), Pennsylvania (542), New Jersey (402), Texas (287), Virginia (239), Florida (170), Colorado (117), Ohio (109), and New Hampshire (100). Seven states had incidence rates >2.0 per 100,000 population: Montana (10.7), New Hampshire (9.2), New Jersey (5.2), Pennsylvania (4.5), Virginia (4.0), Colorado (3.5), and California (3.0). Thirty-six states and 211 (6.7%) of the nation's 3138 counties reported measles cases.

A total of 3176 (93.1%) cases met the standard clinical case definition for measles,* and 1001 (29.3%) were serologically confirmed. The usual seasonal pattern was observed with cases peaking during weeks 18–25 (May and June).

Eighty-seven (2.6%) cases were known to be imported from other countries. An additional 126 (3.7%) cases were epidemiologically linked to imported cases within two generations. Fifty-seven outbreaks (five or more epidemiologically linked cases) were reported and accounted for 89.3% of all cases. Six outbreaks had >100 cases and accounted for 52.7% of all reported cases. Most outbreaks occurred among school-aged children. The largest outbreak (611 cases) occurred in Los Angeles among unvaccinated preschool-aged children.

The incidence rate of measles decreased between 1987 and 1988 for 0–4-, 5–9-, and 10–14-year-olds, and increased in 15–19- and 20–24-year-olds. The highest incidence rate (5.8 per 100,000) occurred in 15–19-year-olds (Table 1).

Complications were reported in 408 (12.0%) cases. Otitis media was reported in 183 (5.4%); diarrhea, in 128 (3.8%); pneumonia, in 93 (2.7%); and encephalitis, in four (0.1%). Three hundred sixty-eight (10.8%) persons were hospitalized. Three measles-attributable deaths were reported (case-fatality rate: 0.9 deaths per 1000 cases).

*Fever ≥101 F (≥38.3 C), if measured; generalized rash lasting ≥3 days; and at least one of the following: cough, coryza, or conjunctivitis.

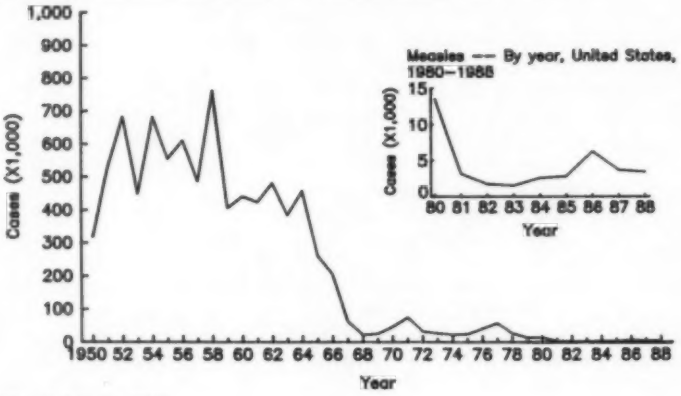
Measles — Continued

Of the 2179 (63.9%) patients for whom setting of transmission was reported, 871 (40.0%) acquired measles in primary or secondary schools; 267 (12.3%), in colleges or universities; 553 (25.4%), at home; 127 (5.8%), in medical settings; 69 (3.2%), in day care; and 292 (13.4%), in a variety of other settings.

A total of 1548 (45.4%) patients had been vaccinated on or after the first birthday (Table 2), including 729 (21.4%) who were vaccinated at 12–14 months of age. One thousand eight hundred sixty-three (54.6%) persons were not vaccinated on or after the first birthday. Of these, vaccination would have been routinely indicated† for 803 (23.5%). Six hundred twenty-eight (18.4%) cases occurred in persons for whom vaccine was not routinely indicated, and 432 (12.7%) were unvaccinated for other reasons.

†Cases in persons who were eligible for vaccination but who were not vaccinated.

FIGURE 1. Reported measles cases — United States, 1950–1988*



*Provisional data for 1988.

TABLE 1. Age distribution and incidence rates* for measles — United States, 1987 and 1988†

	1987			1988			
Age (yrs)	No.	(%)	Rate	No.	(%)	Rate	Rate change (%)
0–4	1065	(29.2)	5.9	978	(28.7)	5.3	–10.2
5–9	337	(9.2)	1.9	312	(9.1)	1.7	–10.5
10–14	717	(19.6)	4.3	576	(16.9)	3.5	–18.6
15–19	1047	(28.7)	5.6	1054	(30.9)	5.8	+3.6
20–24	205	(5.6)	1.0	252	(7.4)	1.3	+30.0
≥25	281	(7.7)	0.2	239	(7.0)	0.2	0.0
Total	**3652**	**(100.0)**	**1.5**	**3411**	**(100.0)**	**1.4**	**–6.7**

*Per 100,000 population.
†Provisional data for both years.

Measles — Continued

Of the 3411 reported cases, 1942 occurred among school-aged children. Of these, 1339 (68.9%) had been appropriately vaccinated. Most of the vaccine failures occurred in persons 12–19 years of age (Figure 2).

Reported by: Div of Immunization, Center for Prevention Svcs, CDC.

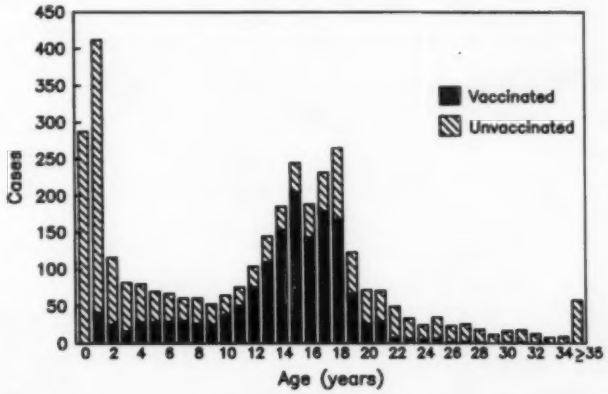
Editorial Note: Since 1983, the number of reported measles cases increased annually until 1986, then decreased in 1987 and slightly in 1988 (Figure 1). In 1988, the age distribution of cases was similar to those in previous years. As in previous years, primarily two types of outbreaks occurred: those among highly vaccinated (vaccine

TABLE 2. Classification of measles cases — United States, 1988*

Classification	No.	% of total
Unvaccinated	**1863**	**(54.6)**
Vaccine indicated†	**803**	**(23.5)**
Vaccine not routinely indicated	**628**	**(18.4)**
Persons <16 mos of age	502	(14.7)
Persons born before 1957	97	(2.8)
Prior physician diagnosis	15	(0.4)
Medical exemptions	14	(0.4)
Other	**432**	**(12.7)**
Non-U.S. citizens	40	(1.2)
Religious and philosophic exemption	392	(11.5)
Appropriately vaccinated	**1548**	**(45.4)**
Total	**3411**	**(100.0)**

*Provisional data.
†Includes 92 children who received vaccine before the first birthday.

FIGURE 2. Age distribution of measles patients, by vaccination status — United States, 1988*



*Provisional data.

Measles — Continued

coverage >90%) school-aged children and those among unvaccinated preschool-aged children (*2*).

The epidemiology of measles points to two major impediments to measles elimination—unvaccinated preschool-aged children, allowing large outbreaks in inner-city areas, and vaccine failures, accounting for outbreaks in highly vaccinated school-aged populations. Therefore, in January 1989, the Immunization Practices Advisory Committee (ACIP) issued revised recommendations (*3*). First, ACIP lowered the age for routine measles vaccination in inner-city areas to as low as 9 months so that children would be vaccinated before they could be exposed to measles, and coverage would therefore be increased. Second, ACIP recommended that, for outbreaks in schools, previously vaccinated persons in specific target groups be revaccinated in affected schools and unaffected schools at risk for transmission. The groups targeted for revaccination are persons vaccinated before 1980 or vaccinated at 12–14 months of age. The rationale for choosing the 1980 date has been described (*3*). Data from four recent outbreak investigations have shown that persons vaccinated before 1980 are at increased risk for measles (Table 3). This is believed to be due primarily to a higher rate of failure of initial seroconversion for persons vaccinated before that time. Although children vaccinated between 12 and 14 months of age are at higher risk than are children vaccinated at older ages, only a minority of children with measles in most outbreaks have been vaccinated between these ages (*1*).

Implementation of these new outbreak-control recommendations during 1989 has been expensive because of the large number of outbreaks and cases. In the first 26 weeks of 1989, 8553 cases were reported, a 392% increase over the same period in 1988. More than 90 outbreaks have been reported; most have occurred in secondary schools and colleges. Seventy-one colleges have reported at least one case of measles. The largest outbreak has occurred in Houston, with >1700 cases, primarily

TABLE 3. Year of vaccination as a risk factor for persons vaccinated at ≥15 months of age — United States

Cohort studies

Year of vaccine	Students	Cases	AR*	RR*	P value	Ref.
<1977	741	18	2.5	UD*	<0.05	(*4*)
≥1977	176	0	0.0			
<1979	1132	15	1.3	UD	0.05	CDC, unpublished
≥1979	311	0	0.0			data

Case-control studies

Year of vaccine	Controls	Cases	OR*	P value	Ref.
<03/1979	36	21	3.0	0.04	(*5*)
≥10/1980	36	7			
<1979	94	29	7.1	<0.05	(*6*)
≥1979	23	1			

*AR = attack rate; RR = relative risk; UD = undefined; OR = odds ratio.

Measles – Continued

among unvaccinated preschool-aged children. Several states have spent several hundred thousand dollars each to revaccinate young adults in secondary schools and colleges.

Because of continued outbreaks among school-aged children, in May 1989, the ACIP decided to recommend a routine two-dose measles vaccination schedule. The second dose will be administered at entry to kindergarten or first grade (children 4–6 years of age). A two-dose schedule will decrease primary vaccine failures and thus the number of susceptibles and measles outbreaks in school-aged children. In addition, outbreak-control measures will be simplified. Detailed recommendations for this schedule and outbreak control are being formulated and will be published in the fall of 1989. Until then, the previously published schedules and recommendations should be followed. The American Academy of Pediatrics has also developed a routine two-dose measles vaccination schedule, which recommends that the second dose be given at entry to middle or junior high school (*7*).

The two-dose schedule will not affect outbreaks in inner-city areas among unvaccinated preschool-aged children. Prevention of such outbreaks requires intensive efforts directed at increasing age-appropriate immunization levels, which are being initiated by CDC and state and local health departments. These include activities in service delivery, assessment, information/education, operational research and surveillance. The two-dose schedule and intensive efforts to raise age-appropriate immunization levels should facilitate the goal of measles elimination in the United States.

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Progress in Chronic Disease Prevention

Surgeon General's Workshop on Health Promotion and Aging: Summary Recommendations of the Medication Working Group

The "Surgeon General's Workshop on Health Promotion and Aging" met in Washington, D.C., on March 20–23, 1988. This workshop provided health professionals with recommendations and proposals for health promotion that address the needs of the elderly. The recommendations of the Alcohol Working Group have been summarized (*1*). Following is a summary of recommendations from the Medication Working Group.

Workshop on Aging — Continued

SUMMARY RECOMMENDATIONS OF THE MEDICATION WORKING GROUP

Education and Training

- More training and continuing medical education courses should be provided that emphasize the resources available to the prescriber, understanding of age-related physiologic metabolic changes, nonjudgmental patient-counseling skills, and interdisciplinary communication skills.
- Social service providers, home caregivers, family members of older adults, and older adults should be trained in medication management and educated about the potential for adverse medication reactions.
- The role of pharmacists in management of and education about geriatric medications should be expanded, and sites for prescribing information in all practice settings should be identified.

(Continued on page 611)

TABLE I. Summary — cases of specified notifiable diseases, United States

Disease	35th Week Ending			Cumulative, 35th Week Ending		
	Sep. 2, 1989	Sep. 3, 1988	Median 1984-1988	Sep. 2, 1989	Sep. 3, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	531	U*	253	22,945	21,256	8,471
Aseptic meningitis	302	223	357	4,735	3,794	4,998
Encephalitis: Primary (arthropod-borne & unspec)	21	28	28	475	544	684
Post-infectious	7	2	2	63	87	82
Gonorrhea: Civilian	12,934	13,896	17,013	439,288	460,248	552,126
Military	213	175	311	7,139	8,184	11,382
Hepatitis: Type A	989	488	475	22,787	16,636	14,708
Type B	381	524	524	15,158	15,143	17,032
Non A, Non B	26	69	61	1,583	1,798	2,445
Unspecified	26	33	91	1,576	1,438	3,060
Legionellosis	23	22	22	662	653	473
Leprosy	4	-	4	107	114	151
Malaria	39	52	25	798	625	625
Measles: Total†	179	19	29	10,115	2,170	2,388
Indigenous	174	15	26	9,674	1,943	1,991
Imported	5	4	7	441	227	265
Meningococcal infections	23	22	31	1,920	2,087	2,003
Mumps	68	34	38	3,970	3,436	3,356
Pertussis	71	80	60	2,016	1,759	1,759
Rubella (German measles)	6	1	8	293	152	416
Syphilis (Primary & Secondary): Civilian	784	670	593	26,720	27,380	18,709
Military	6	1	1	163	112	121
Toxic Shock syndrome	10	8	6	247	238	245
Tuberculosis	389	484	484	13,979	14,013	14,206
Tularemia	1	10	5	107	143	142
Typhoid Fever	6	8	8	318	235	222
Typhus fever, tick-borne (RMSF)	26	24	25	411	444	476
Rabies, animal	81	105	98	3,178	2,902	3,575

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis (Md. 1)	67
Botulism: Foodborne	15	Plague	3
Infant	9	Poliomyelitis, Paralytic	-
Other	4	Psittacosis (Ariz. 1)	67
Brucellosis (Va. 1)	57	Rabies, human	1
Cholera	-	Tetanus	31
Congenital rubella syndrome	1	Trichinosis	13
Congenital syphilis, ages < 1 year	82		
Diphtheria	2		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Two of the 179 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending September 2, 1989 and September 3, 1988 (35th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	22,945	4,735	475	63	439,288	460,248	22,787	15,158	1,583	1,576	662	107
NEW ENGLAND	963	262	17	2	13,295	14,157	481	750	55	57	42	7
Maine	46	12	5	-	182	279	13	40	5	1	5	-
N.H.	35	23	-	-	116	178	45	44	8	4	1	-
Vt.	10	27	2	-	44	88	26	60	5	-	1	-
Mass.	517	91	5	2	5,215	4,825	144	449	23	42	27	5
R.I.	56	44	-	-	987	1,198	27	45	3	3	8	1
Conn.	299	65	5	-	6,751	7,589	226	112	11	7	-	1
MID. ATLANTIC	6,522	400	50	5	55,985	73,544	2,664	2,242	147	194	170	17
Upstate N.Y.	877	194	17	4	10,382	8,841	569	419	55	6	51	3
N.Y. City	3,332	86	2	1	25,023	33,751	273	839	28	164	23	12
N.J.	1,539	-	31	-	9,761	10,036	288	420	20	5	33	1
Pa.	774	120	-	-	10,799	20,916	1,534	564	44	19	63	1
E.N. CENTRAL	1,858	798	158	6	82,032	76,262	1,292	1,855	182	66	175	3
Ohio	287	204	54	2	21,761	17,121	284	349	31	15	82	-
Ind.	251	130	28	3	5,969	6,032	145	306	21	25	35	1
Ill.	876	131	29	1	26,382	21,843	586	485	69	16	14	2
Mich.	351	290	34	-	21,591	24,609	191	445	39	10	28	-
Wis.	93	43	13	-	6,329	6,657	106	270	22	-	16	-
W.N. CENTRAL	544	230	23	3	20,567	19,064	821	678	70	22	28	1
Minn.	118	7	-	1	2,236	2,575	83	75	14	3	2	-
Iowa	38	36	8	-	1,792	1,438	65	24	12	4	5	-
Mo.	262	107	2	-	12,611	10,877	463	475	25	10	11	-
N. Dak.	6	9	1	-	83	119	4	17	3	1	1	-
S. Dak.	4	7	4	-	174	354	10	7	5	-	2	-
Nebr.	25	6	4	-	890	1,069	60	18	-	2	2	1
Kans.	91	58	4	2	2,781	2,632	136	62	11	2	5	-
S. ATLANTIC	4,807	958	85	22	125,172	130,022	2,151	2,923	239	253	85	1
Del.	59	41	1	-	2,095	2,012	30	103	5	8	7	-
Md.	473	123	14	2	14,335	13,452	588	517	21	24	23	-
D.C.	376	8	-	-	8,117	9,840	4	19	2	-	-	-
Va.	325	173	30	3	10,355	9,256	209	216	53	147	6	-
W. Va.	32	24	31	-	959	914	15	70	9	4	-	-
N.C.	351	112	4	2	19,192	18,286	298	713	61	-	23	1
S.C.	212	26	-	-	11,463	9,937	49	406	3	9	4	-
Ga.	747	77	1	1	23,962	24,971	234	283	9	8	13	-
Fla.	2,232	374	4	14	34,694	41,355	724	596	76	53	9	-
E.S. CENTRAL	494	435	19	2	36,727	35,996	259	1,078	106	5	35	-
Ky.	77	126	7	1	3,532	3,629	79	285	34	4	8	-
Tenn.	156	75	-	-	12,428	12,175	102	577	22	-	18	-
Ala.	154	170	12	-	11,527	11,088	54	154	46	1	9	-
Miss.	107	64	-	1	9,240	9,104	24	62	4	-	-	-
W.S. CENTRAL	2,102	610	46	4	47,866	51,207	2,542	1,498	106	362	35	16
Ark.	57	25	5	-	5,588	5,013	168	54	11	6	1	-
La.	338	49	10	-	10,192	10,295	109	256	12	1	5	-
Okla.	101	51	11	2	4,166	4,757	288	141	23	24	20	-
Tex.	1,606	485	20	2	27,920	31,142	1,897	1,047	60	331	9	16
MOUNTAIN	676	195	7	3	9,676	10,118	3,458	1,019	154	110	37	2
Mont.	13	5	-	-	132	314	54	38	6	2	2	1
Idaho	18	1	-	1	124	251	116	87	11	3	-	-
Wyo.	13	4	-	-	67	139	34	4	2	-	-	-
Colo.	224	95	1	1	2,090	2,271	385	125	41	46	3	-
N. Mex.	52	8	1	-	926	954	428	145	28	2	3	-
Ariz.	176	59	2	-	3,731	3,654	1,796	378	38	48	18	1
Utah	48	15	1	1	311	383	372	84	20	4	7	-
Nev.	132	8	2	-	2,295	2,152	273	158	10	5	4	-
PACIFIC	4,979	847	70	16	47,968	49,878	9,119	3,115	524	507	55	60
Wash.	401	-	2	1	4,325	4,736	2,143	683	146	39	19	6
Oreg.	153	-	-	-	2,098	2,167	1,610	337	53	9	1	1
Calif.	4,303	774	59	15	40,488	41,857	4,722	1,989	312	445	32	49
Alaska	11	15	7	-	686	691	501	44	5	4	1	-
Hawaii	111	58	2	-	371	427	143	62	8	10	2	4
Guam	1	-	-	-	-	98	-	-	-	-	-	-
P.R.	885	65	2	1	703	935	134	167	16	18	-	8
V.I.	26	-	-	-	476	309	-	6	-	-	-	-
Amer. Samoa	-	-	-	-	-	65	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	34	-	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 2, 1989 and September 3, 1988 (35th Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	798	174	9,674	5	441	2,170	1,920	68	3,970	71	2,016	1,759	6	293	152
NEW ENGLAND	46	-	280	1	30	107	141	2	70	2	261	202	-	6	5
Maine	-	-	-	11	1	7	13	-	-	-	9	11	-	-	-
N.H.	2	-	8	-	3	87	15	-	13	-	5	33	-	4	3
Vt.	2	-	1	-	2	-	6	2	3	-	6	3	-	1	-
Mass.	25	-	28	-	17	3	75	-	47	2	217	129	-	1	1
R.I.	9	-	38	-	3	-	1	-	-	-	11	10	-	-	1
Conn.	8	-	205	-	4	10	31	-	7	-	13	16	-	-	-
MID. ATLANTIC	136	4	634	2	170	853	263	1	364	17	123	102	-	23	12
Upstate N.Y.	22	-	42	215	98	37	90	-	133	2	45	62	-	10	2
N.Y. City	49	4	76	-	14	44	33	-	18	-	3	3	-	13	7
N.J.	34	-	317	-	-	241	54	-	160	-	21	4	-	-	1
Pa.	31	-	199	-	58	531	86	1	53	15	54	33	-	-	2
E.N. CENTRAL	63	93	2,419	-	64	179	239	-	430	1	192	203	-	22	24
Ohio	9	91	799	-	35	24	89	-	119	-	45	25	-	3	1
Ind.	9	-	78	-	-	57	27	-	40	-	18	58	-	-	-
Ill.	26	-	1,086	-	-	71	64	-	135	-	72	36	-	17	19
Mich.	12	2	296	-	14	23	46	-	106	1	31	29	-	1	4
Wis.	7	-	161	-	15	4	14	-	31	-	26	55	-	1	-
W.N. CENTRAL	25	-	632	-	4	13	71	2	385	1	114	97	-	6	-
Minn.	8	-	15	-	-	11	12	-	1	-	18	41	-	-	-
Iowa	2	-	8	-	1	-	2	2	31	-	13	19	-	1	-
Mo.	9	-	369	-	-	2	22	-	52	1	75	15	-	4	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	-	11	-	-	-
S. Dak.	1	-	-	-	-	-	7	-	-	-	1	5	-	-	-
Nebr.	1	-	106	-	2	-	17	-	5	-	4	-	-	-	-
Kans.	3	-	132	-	1	-	11	-	276	-	3	6	-	1	-
S. ATLANTIC	143	5	517	-	47	311	329	17	675	6	197	180	1	9	16
Del.	5	-	65	-	1	-	2	-	1	-	1	7	-	-	-
Md.	24	-	48	-	31	14	88	2	354	3	29	32	-	2	1
D.C.	8	U	24	U	3	-	15	U	111	U	-	1	U	-	-
Va.	25	-	19	-	3	143	37	2	97	-	24	19	-	-	11
W. Va.	2	-	51	-	-	6	12	-	10	1	21	7	-	-	-
N.C.	18	-	188	-	-	4	44	-	27	-	40	47	-	1	-
S.C.	5	-	3	-	-	-	21	1	20	-	-	1	-	-	-
Ga.	9	-	1	-	1	-	57	12	27	2	28	30	-	-	1
Fla.	46	5	140	-	8	144	63	-	28	-	54	36	1	6	3
E.S. CENTRAL	8	5	201	-	2	88	88	3	198	2	86	68	-	2	2
Ky.	-	-	30	-	2	35	35	-	9	-	1	12	-	-	-
Tenn.	1	5	125	-	-	-	4	2	67	-	31	20	-	2	2
Ala.	5	-	46	-	-	-	17	1	18	2	52	32	-	-	-
Miss.	2	-	-	-	-	34	3	N	N	-	2	4	-	-	-
W.S. CENTRAL	44	2	3,087	-	42	14	130	32	1,287	19	238	93	-	36	6
Ark.	-	-	-	-	5	1	8	3	127	-	18	11	-	-	2
La.	2	2	11	-	-	-	36	24	544	1	14	16	-	5	-
Okla.	6	-	122	-	-	8	21	-	187	2	43	39	-	1	1
Tex.	36	-	2,954	-	37	5	65	5	429	16	163	27	-	30	3
MOUNTAIN	20	4	351	-	26	139	59	7	186	7	486	488	-	34	6
Mont.	1	-	12	-	1	24	1	-	2	-	29	1	-	1	-
Idaho	2	-	-	-	2	1	2	1	15	-	57	271	-	31	-
Wyo.	1	-	-	-	-	-	-	1	8	-	-	1	-	1	-
Colo.	5	-	84	-	6	114	19	4	26	-	32	14	-	-	2
N. Mex.	1	-	16	-	15	-	1	N	N	-	20	37	-	-	-
Ariz.	7	3	140	-	-	-	24	1	92	7	333	141	-	-	-
Utah	-	1	116	-	-	-	5	-	8	-	14	22	-	-	3
Nev.	3	-	1	-	2	-	7	-	5	-	1	1	-	1	1
PACIFIC	313	61	1,853	2	58	485	629	4	425	16	319	326	5	155	81
Wash.	24	-	28	-	13	2	67	-	36	10	130	72	-	-	-
Oreg.	18	-	9	-	19	3	43	N	N	-	7	25	1	3	-
Calif.	261	61	1,497	15	15	468	513	4	374	5	173	170	4	129	55
Alaska	4	-	1	-	-	-	4	-	2	-	-	7	-	-	-
Hawaii	6	-	18	15	9	12	2	-	13	1	9	52	-	23	26
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	1	35	478	-	-	190	4	-	8	-	4	13	1	8	2
V.I.	-	-	4	-	-	-	-	1	14	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.
N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 2, 1989 and September 3, 1988 (35th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	26,720	27,380	247	13,979	14,013	107	318	411	3,178
NEW ENGLAND	1,129	731	13	368	334	2	25	6	7
Maine	8	12	3	12	17	-	-	-	2
N.H.	10	6	1	17	7	-	-	-	1
Vt.	-	3	-	7	2	-	-	-	-
Mass.	348	281	4	183	184	2	15	3	2
R.I.	21	24	2	42	32	-	5	1	-
Conn.	742	405	3	107	92	-	5	2	2
MID. ATLANTIC	4,828	6,981	36	2,718	2,758	2	96	49	511
Upstate N.Y.	593	376	6	227	366	1	24	11	44
N.Y. City	2,466	5,079	2	1,483	1,470	-	48	3	-
N.J.	956	608	9	545	469	-	18	20	-
Pa.	813	918	19	463	453	1	6	15	467
E.N. CENTRAL	1,146	773	38	1,503	1,525	3	35	52	80
Ohio	102	69	11	269	296	-	7	27	7
Ind.	44	39	7	114	149	1	2	18	2
Ill.	519	355	6	692	664	-	18	5	21
Mich.	383	271	14	363	353	1	6	2	10
Wis.	98	39	-	85	73	1	2	-	40
W.N. CENTRAL	219	157	30	359	357	42	5	67	413
Minn.	34	16	7	70	60	-	1	-	66
Iowa	22	16	6	28	38	-	2	2	110
Mo.	115	96	7	169	182	31	1	52	31
N. Dak.	2	2	-	11	12	-	-	1	42
S. Dak.	1	-	3	18	26	6	-	3	66
Nebr.	17	21	5	18	10	1	-	-	38
Kans.	28	6	3	45	40	4	1	9	40
S. ATLANTIC	9,803	9,449	22	2,970	3,013	6	28	123	976
Del.	119	74	1	25	25	-	2	1	24
Md.	522	511	1	252	282	2	7	9	281
D.C.	608	465	1	132	132	-	2	-	2
Va.	362	274	4	242	275	4	4	6	188
W. Va.	12	34	-	52	54	-	-	2	42
N.C.	698	535	6	351	301	-	2	66	5
S.C.	575	474	3	342	329	-	2	22	155
Ga.	1,955	1,568	3	468	504	-	3	14	167
Fla.	4,952	5,514	3	1,116	1,101	-	6	3	112
E.S. CENTRAL	1,889	1,334	5	1,114	1,178	6	2	39	252
Ky.	39	45	1	275	278	1	1	11	109
Tenn.	824	583	3	321	326	4	-	24	55
Ala.	583	384	1	325	357	-	1	2	87
Miss.	444	312	-	193	214	1	-	2	1
W.S. CENTRAL	3,918	2,847	22	1,677	1,759	32	13	50	448
Ark.	247	160	1	169	186	23	-	13	61
La.	921	552	-	233	200	-	1	-	7
Okla.	67	107	12	148	165	9	1	32	73
Tex.	2,683	2,028	9	1,127	1,208	-	11	5	307
MOUNTAIN	548	539	37	302	404	9	6	21	176
Mont.	1	3	-	11	12	1	-	14	61
Idaho	1	2	3	21	14	-	-	2	4
Wyo.	4	1	2	-	2	1	-	2	54
Colo.	55	79	5	19	69	2	2	3	16
N. Mex.	21	30	5	53	79	2	-	-	17
Ariz.	184	115	9	139	170	-	3	-	20
Utah	13	11	9	26	18	2	1	-	2
Nev.	269	289	4	33	40	1	-	-	2
PACIFIC	3,240	4,569	44	2,968	2,678	5	108	4	316
Wash.	252	152	2	160	137	-	6	-	-
Oreg.	166	193	-	96	102	3	5	1	-
Calif.	2,808	4,190	41	2,559	2,307	2	89	3	252
Alaska	5	10	-	35	27	-	-	-	63
Hawaii	9	24	1	118	105	-	8	-	-
Guam	-	3	-	-	19	-	-	-	-
P.R.	379	421	-	200	155	-	3	-	47
V.I.	8	1	-	4	5	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	17	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending September 2, 1989 (35th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	>65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	641	439	109	51	26	16	40
Boston, Mass.	191	115	35	19	15	7	18
Bridgeport, Conn.	51	36	7	3	2	3	2
Cambridge, Mass.	22	20	1	1	-	-	4
Fall River, Mass.	22	20	1	-	1	-	-
Hartford, Conn.	63	40	8	9	4	2	3
Lowell, Mass.	30	21	6	1	2	-	2
Lynn, Mass.	14	10	4	-	-	-	1
New Bedford, Mass.	27	19	6	2	-	-	-
New Haven, Conn.	41	24	12	3	2	-	4
Providence, R.I.	53	44	6	2	-	1	1
Somerville, Mass.	6	4	1	1	-	-	-
Springfield, Mass.	40	30	5	3	-	2	4
Waterbury, Conn.	24	15	8	1	-	-	-
Worcester, Mass.	57	41	9	6	-	1	1
MID. ATLANTIC	2,473	1,553	492	286	77	65	124
Albany, N.Y.	57	42	6	3	1	5	4
Allentown, Pa.	19	13	6	-	-	-	1
Buffalo, N.Y.	107	73	22	5	3	4	12
Camden, N.J.	25	11	6	2	1	5	-
Elizabeth, N.J.	20	17	2	1	-	-	3
Erie, Pa.†	44	32	6	2	4	-	4
Jersey City, N.J.	48	30	3	14	-	1	1
N.Y. City, N.Y.	1,341	810	283	178	42	28	55
Newark, N.J.	66	24	18	14	7	3	8
Paterson, N.J.	33	21	3	6	3	-	1
Philadelphia, Pa.	294	192	59	28	8	7	15
Pittsburgh, Pa.†	76	51	17	5	1	2	6
Reading, Pa.	41	33	6	2	-	-	2
Rochester, N.Y.	102	69	17	8	4	4	7
Schenectady, N.Y.	20	16	3	1	-	-	-
Scranton, Pa.†	24	19	3	1	1	-	-
Syracuse, N.Y.	73	46	13	7	1	6	3
Trenton, N.J.	35	21	8	5	1	-	1
Utica, N.Y.	27	19	7	1	-	-	1
Yonkers, N.Y.	21	14	4	3	-	-	-
E.N. CENTRAL	2,093	1,345	432	164	56	96	75
Akron, Ohio	43	32	7	1	1	2	-
Canton, Ohio	35	21	10	3	1	-	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	97	74	18	1	-	4	12
Cleveland, Ohio	147	69	27	18	4	9	1
Columbus, Ohio	116	58	29	14	3	12	1
Dayton, Ohio	96	66	20	5	-	5	5
Detroit, Mich.	239	134	51	31	12	11	5
Evansville, Ind.	47	29	9	5	4	-	2
Fort Wayne, Ind.	48	35	7	1	-	3	3
Gary, Ind.	14	9	5	-	-	-	-
Grand Rapids, Mich.	45	30	8	4	1	2	5
Indianapolis, Ind.	165	95	39	12	8	11	-
Madison, Wis.	45	26	12	5	2	-	5
Milwaukee, Wis.	131	92	24	9	1	5	3
Peoria, Ill.	34	24	5	-	1	4	2
Rockford, Ill.	42	27	6	4	3	2	1
South Bend, Ind.	46	36	6	2	1	1	4
Toledo, Ohio	86	63	14	3	4	2	6
Youngstown, Ohio	55	43	10	1	-	1	2
W.N. CENTRAL	740	524	115	49	23	29	39
Des Moines, Iowa	93	69	14	6	1	3	7
Duluth, Minn.	24	22	2	-	-	-	2
Kansas City, Kans.§	67	52	10	4	1	-	2
Kansas City, Mo.	107	74	20	8	3	2	8
Lincoln, Nebr.	29	21	5	3	-	-	4
Minneapolis, Minn.	144	101	22	12	2	7	7
Omaha, Nebr.	67	44	15	3	3	2	3
St. Louis, Mo.	101	65	15	8	7	6	4
St. Paul, Minn.	49	34	6	1	3	5	-
Wichita, Kans.	59	42	6	4	3	4	2

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	>65	45-64	25-44	1-24	<1	Total
S. ATLANTIC	1,379	796	296	167	53	67	64
Atlanta, Ga.	177	91	40	21	5	20	1
Baltimore, Md.	281	158	65	37	11	10	24
Charlotte, N.C.	100	53	32	11	2	2	7
Jacksonville, Fla.	108	63	27	8	5	5	4
Miami, Fla.	139	71	28	27	9	4	1
Norfolk, Va.	44	19	11	7	2	5	4
Richmond, Va.	67	43	9	7	5	3	6
Savannah, Ga.	49	28	11	10	-	-	4
St. Petersburg, Fla.	95	79	8	3	3	2	5
Tampa, Fla.	71	52	14	2	-	3	4
Washington, D.C.§	220	118	44	34	11	13	4
Wilmington, Del.	28	21	7	-	-	-	-
E.S. CENTRAL	769	489	168	58	22	32	48
Birmingham, Ala.	119	70	24	13	5	7	3
Chattanooga, Tenn.	63	45	14	2	1	1	9
Knoxville, Tenn.	80	55	15	7	1	2	10
Louisville, Ky.	106	67	30	7	7	5	5
Memphis, Tenn.	152	103	33	6	2	8	10
Mobile, Ala.	80	53	15	6	3	3	3
Montgomery, Ala.	54	33	8	9	3	1	1
Nashville, Tenn.	115	73	29	8	-	5	8
W.S. CENTRAL	1,669	1,019	355	172	62	60	60
Austin, Tex.	59	37	10	8	3	1	6
Baton Rouge, La.	27	15	6	4	2	-	-
Corpus Christi, Tex.	44	33	8	3	-	-	1
Dallas, Tex.	180	96	40	22	12	10	4
El Paso, Tex.	65	40	16	7	-	2	4
Fort Worth, Tex	117	71	24	12	4	5	5
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	69	47	14	5	1	2	1
New Orleans, La.	106	60	17	6	9	14	-
San Antonio, Tex.	150	94	37	9	5	5	12
Shreveport, La.	46	31	8	3	1	3	5
Tulsa, Okla.	72	59	6	4	1	2	4
MOUNTAIN	657	426	113	60	29	29	24
Albuquerque, N. Mex.	74	44	10	12	7	1	2
Colo. Springs, Colo.	44	31	8	2	1	2	2
Denver, Colo.	88	59	13	7	2	7	3
Las Vegas, Nev.	120	81	23	9	4	3	10
Ogden, Utah	20	12	3	3	1	1	-
Phoenix, Ariz.	169	107	30	17	6	9	-
Pueblo, Colo.	18	16	2	-	-	-	1
Salt Lake City, Utah	42	18	9	6	7	2	1
Tucson, Ariz.	82	58	15	4	1	4	5
PACIFIC	1,846	1,179	344	197	67	44	103
Berkeley, Calif.§	19	13	3	2	-	1	-
Fresno, Calif.	54	38	6	6	3	1	2
Glendale, Calif.	33	23	8	1	1	-	-
Honolulu, Hawaii	85	56	20	6	2	1	8
Long Beach, Calif.	74	39	13	11	8	3	17
Los Angeles Calif.	538	351	92	56	20	7	16
Oakland, Calif.	66	39	14	8	3	2	2
Pasadena, Calif.	37	26	4	3	1	3	1
Portland, Oreg.	165	112	26	14	8	4	3
Sacramento, Calif.	137	90	28	9	4	8	8
San Diego, Calif.	138	79	31	15	6	5	14
San Francisco, Calif.	129	70	26	24	3	6	2
San Jose, Calif.	176	115	41	17	1	2	13
Seattle, Wash.	116	74	17	20	4	1	2
Spokane, Wash.	39	29	8	2	-	-	5
Tacoma, Wash.	40	25	9	3	3	-	10
TOTAL	12,267††	7,770	2,424	1,204	415	438	578

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past available 4 weeks.

Workshop on Aging — Continued

Service

- Reimbursement for pharmacy services for the elderly should be independent of dispensation or cost of the product.
- Reimbursement patterns should encourage better access to medical care for persons needing complex medication regimens and for isolated patients.
- Access to medicines and pharmaceutical services should be included as a basic part of health-care programs for the elderly and should include access to medicines for the geographically isolated and mobility-impaired.
- Community-based programs should strengthen efforts to ensure that older Americans have the information necessary to participate with their health-care providers in medication management.

Research

- Cross-sectional and longitudinal studies and other pharmacoepidemiologic research should emphasize nonlethal side effects, efficacy, risks, compliance, and cost-effectiveness of medications.
- National data sets should be studied further to assess medication-use patterns among older adults.
- Studies should focus on cost-effective means of educating the consumer and the home caregiver on proper use of medications and monitoring of side effects and on the standardization of medication profile and drug interaction information.

Policy

- The federal government should implement quickly the recently passed medication provisions of the Medicare Catastrophic Coverage Act of 1988 (100 PL 360; 1988 H.R. 2470).
- Regulatory agencies should explore fraud and quackery by reviewing the marketing of certain drugs, vitamins, food stuffs, and nutritional supplements used as medications.
- The Food and Drug Administration (FDA) should complete development and implementation of proposed guidelines for drugs for use in the elderly, especially elderly subgroups at risk, and should emphasize not excluding persons from participating in clinical trials on the basis of age alone.
- Drug labeling should be enforced and should emphasize patient education by including specific instructions for the elderly.

Reported by: Office of the Surgeon General, Public Health Svc. Cardiovascular Health Br, Div of Chronic Disease Control and Community Intervention, Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: Most (60%) adverse reactions from drugs are pharmacologic (*2,3*), and many of these may be preventable with more careful prescribing, monitoring, and patient education. Elderly patients have a higher risk for developing adverse drug reactions than do persons in the general population (*4,5*); use of multiple drugs may be the strongest of several factors that predispose older persons to this excess risk. Thus, one important strategy for preventing adverse drug reactions among elderly persons is to limit the number of drugs used. This approach can reduce side effects, the possibility of drug interactions, and noncompliance (*6*). Furthermore, noncompliance appears to be associated more with the number of prescribed drugs taken than with increasing patient age (*7*).

Workshop on Aging — Continued

Understanding of drug reactions in the elderly is based on multicenter collaborative drug surveillance programs, voluntary reporting to the FDA, cohort studies, control phase of intervention demonstrations, institutional or population-specific prevalence surveys, and computerized record linkage of secondary data sets. FDA data now indicate an overall rate of 8.5 adverse drug reaction reports per 100,000 population; the rate among persons aged ≥65 years is 16.0, nearly double this rate (*5*).

Antihypertensive diuretics provide an important illustration of the current problems and the potential solutions in the area of geriatric medications. When FDA data from 1968 through 1982 were tabulated to identify medications associated with untoward effects in older patients (*4*), antihypertensive diuretics ranked fifth among the generic drug classes with the highest reported number of adverse drug reactions. Studies on hypertension in the elderly have demonstrated the importance of attentive monitoring during treatment (*8,9*). Such monitoring is important because these medications are so frequently implicated in adverse drug reactions among the elderly (*7*).

A major recurring theme in the recommendations of the Surgeon General's Workshop is education of health professionals, home caregivers and family members, and the elderly patients themselves. Implementing the recommendations of the Medication Working Group should help reduce the number of adverse drug reactions and increase medication compliance among the elderly.

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Epidemiologic Notes and Reports

Cadmium and Lead Exposure Associated with Pharmaceuticals Imported from Asia — Texas

In August 1988, the Texas Department of Health (TDH) investigated illegal sales in rural west Texas of pharmaceutical drugs manufactured in Asia. These drugs, identified by TDH and Food and Drug Administration (FDA) agents as "chuifong tokuwan" (a pharmaceutical compound manufactured by the Nan Ling Pharmaceutical Company of Hong Kong), are sold in pill form. Chuifong tokuwan contains a drug

Cadmium and Lead Exposure – Continued

combination (diazepam, indomethacin, hydrochlorothiazide, mefenamic acid, dexamethasone, lead, and cadmium) that is not approved by FDA and not legal for sale in or importation into the United States. The drugs usually were repackaged and relabeled as "The Miracle Herb—Mother Nature's Finest."

TDH tested 93 self-referred persons who had ingested the pills for exposure to lead and cadmium. Of these, 57 (61%) were female; >90% were white non-Hispanics; the mean age was 55 years. Sixty-six (71%) reported taking the pills to relieve symptoms of medical conditions such as arthralgias (51%) and other pain (headache, stiff neck, back pain [26%]). Twenty-two (24%) persons had elevated urine levels of cadmium; none had elevated levels of lead (blood lead ≥25 μg/dL). However, 39 (42%) persons had elevated urine values for retinol-binding protein (RBP), a low-molecular-weight protein indicative of renal tubular dysfunction (*1–3*). The mean urine cadmium level for exposed persons was 1.8 μg/mL, compared with 0.5 μg/mL for a nonrandom sampling of 14 unexposed persons. In exposed persons, 22 (24%) urine samples tested for cadmium were >2.5 μg/mL, the upper limit of normal. None of the samples from unexposed persons had elevated values.

The chuifong tokuwan seized in this investigation was destroyed. The investigation is continuing.

Reported by: D Baker, MS, Food and Drug Div, J Brender, PhD, Environmental Epidemiology, KC Davis, Texas Dept of Health. Surveillance and Programs Br, Div of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control, CDC.

Editorial Note: Chuifong tokuwan first appeared in the United States in 1974. Although it was banned by FDA in 1978, the drug is distributed illegally in certain parts of the United States and is sometimes sold by mail. The primary users of chuifong tokuwan in this study were long-time residents of Texas; however, use of unapproved imported drug combinations is common among recent immigrants to the United States, particularly those from Asia and Latin America (*4–7*). Although these products are frequently perceived as relatively harmless herbal "folk remedies," they often contain cortico- or anabolic steroids; nonsteroidal anti-inflammatory drugs (NSAIDs); prescription antibiotics, such as tetracycline and chloramphenicol; and controlled substances, such as diazepam or narcotics, and have potentially serious or fatal health effects.

Use of chuifong tokuwan may increase the body burden of cadmium and may have contributed to renal tubular dysfunction in persons using this compound. Through chronic exposure, cadmium can accumulate in certain organs, particularly the kidneys. Both cadmium and several of the prescription analgesics in chuifong tokuwan can cause renal tubular cell damage (*8–11*). Cadmium can adversely affect function of the proximal renal tubules (*3,8–10*); increased urinary protein excretion of low-molecular-weight proteins (e.g., RBP) is an early consequence of proximal renal tubular damage by cadmium (*2,3,9,10*).

In persons who were also taking other medications, the analgesic nephropathy associated with chronic use of many NSAIDs may have contributed to renal tubular dysfunction (*9,11*). Alternatively, increased urinary RBP values could reflect renal dysfunction related to the underlying illness (e.g., arthritis) for which many of the patients took this medication. However, adverse effects on renal function have not been reported with use of either indomethacin or mefenamic acid (the NSAIDs present in the pills analyzed), even with prolonged use (*11*).

Cadmium and Lead Exposure — Continued

Cadmium is a cumulative toxicant, with a biological half-life of >10 years in humans (*12*). Medical evaluation, including urine cadmium and urinary RBP values, is recommended for persons who have used chuifong tokuwan. Additional renal-function evaluation should be included in the medical follow-up of persons whose urinary RBP or urine cadmium values are abnormal.

Complex cultural and linguistic barriers necessitate cooperation with traditional healers (e.g., acupuncturists, herbalists) and local leaders of immigrant communities to inform these groups about the hazards associated with use of specific products.

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Notice to Readers

Publication of Guide for Developing Policies for HIV-Infected Students and School Staff

The National Association of State Boards of Education (NASBE) is one of 20 national organizations that receive assistance from CDC to help schools provide effective health education programs to prevent the spread of human immunodeficiency virus (HIV). NASBE has published a guide that CDC commends to its readers: *Someone at School Has AIDS: A Guide to Developing Policies for Students and School Staff Members Who Are Infected with HIV.*

Publication of Guide — Continued

To develop the guide, NASBE convened experts in medicine, public health, education, and law* and has recommended scientifically and legally based policy statements that local and state departments of education can use in developing policies for HIV-infected students and staff. The guide addresses infection control, HIV-infected students and school staff, confidentiality, and HIV-antibody testing. The guide also includes resources for further information about HIV education, discrimination, disease reporting, policymaking, and crisis management.

Copies of the guide are available from NASBE, Publications Department, 1012 Cameron Street, Alexandria, VA 22314; telephone (703) 684-4000.

*Representatives of the following organizations participated in developing and/or reviewing the guide: American Academy of Pediatrics, American Association of School Administrators, American Bar Association, American Federation of Teachers, American Medical Association, Association of State and Territorial Health Officials, CDC, Council for Exceptional Children, Council of Chief State School Officers, Intergovernmental Health Policy Project, Michigan Department of Education, National Association of Elementary School Principals, National Association of School Nurses, National Association of Secondary School Principals, National Congress of Parents and Teachers, National Education Association, National School Boards Association, U.S. Department of Education, and U.S. Department of Justice.

FIGURE I. Reported measles cases — United States, weeks 31–34, 1989

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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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